ABSTRACT: A disposable panty having an improved crotch construction which at least one auxiliary layer of absorbent material is disposed over the crotch area on the inner surface thereof, with the auxiliary layer secured to the body portion of the panty at the opposite edges of the crotch area formed by the leg openings so that the auxiliary layer cooperates with the crotch area to form a receptacle for a sanitary napkin. In the preferred construction, two auxiliary layers are provided so that the auxiliary layer on the soiled side of a first napkin can be removed with the napkin, and the next napkin inserted between the crotch area and the remaining auxiliary layer.
DISPOSABLE PANTY WITH IMPROVED CROTCH CONSTRUCTION

DESCRIPTION OF THE INVENTION

The present invention relates generally to disposable panties and, more particularly, to disposable panties of the type that form a receptacle or pocket for receiving and holding a sanitary napkin.

It is the primary object of the present invention to provide a disposable panty having an improved crotch construction adapted to receive a sanitary napkin, and which can be efficiently manufactured at high production rates at a low cost.

It is another object of the invention to provide an improved disposable panty of the foregoing type which can be readily made in a single size that can be worn by a relatively wide range of different sized users.

A further object of the invention is to provide an improved disposable panty of the type described above which can be made from extremely simple patterns.

Yet another object of the invention is to provide such an improved disposable panty which can be easily and rapidly made from only two or three pieces of disposable material with only a few simple seams.

A still further object of the invention is to provide such an improved disposable panty which is readily adaptable to automated production.

It is another object of the present invention to provide such an improved disposable panty which can be used with or without a sanitary napkin, and which permits the napkin to be changed without disposing of the panty, so that the same panty can be used with several napkins.

Other objects and advantages of the invention will be apparent from the following detailed description taken in connection with the accompanying drawings, in which:

FIG. 1 is a front elevation of a disposable panty embodying the present invention, with a fragment of the front portion thereof removed to reveal the internal structure;

FIG. 2 is a section taken along line 2-2 in FIG. 1;

FIG. 3 is a section taken along line 3-3 in FIG. 3; and

FIG. 4 is a fragmentary perspective of the crotch construction of the panty of FIGS. 1 through 3.

While the invention is susceptible of various modifications and changes, certain preferred embodiments thereof have been shown by way of example in the drawings which will be described in detail herein. It should be understood, however, that it is not intended to limit the invention to the particular forms disclosed but, on the contrary, the intention is to cover all modifications, equivalents, and alternatives falling within the spirit and scope of the invention.

Turning now to the drawings, there is shown a disposable panty having a body portion 10 forming a pair of leg openings 11 and 12, and a crotch area 13. To permit a single panty size to fit a number of different sized users, an elastic band 14 is sewed around the waist of the panty, and a pair of elastic bands 15 and 16 are sewed around the two leg openings 11 and 12, respectively. The panty may of any suitable disposable material, but one particularly preferred material comprises a nonwoven crossed thread fabric having an open mesh construction, with an applique of fine cotton fibers adhesively bonded to at least one side thereof. The nonwoven fabric comprises a set of spaced warped threads which extend in the machine direction, and a set of spaced fill threads which extend across the warp threads in the transverse direction. Thus, the two sets of threads are disposed in face-to-face relation to each other, and are adhesively bonded together where the threads of one set cross the threads of the other set. The threads are typically made of nylon, rayon or the like. The cotton appliques are formed by depositing fine fibers on the crossed threaded fabric in a random manner, such as by air forming or the like. The thickness of the applique may be varied to provide the composite material with the desired softness, bulk, feel, and other characteristics.

In accordance with one important aspect of the present invention, at least one auxiliary layer of absorbent material is disposed over the crotch area of the panty on the inner surface thereof, with the auxiliary layer being secured to the body portion of the panty at the opposite edges of the crotch area formed by the leg openings so that the auxiliary layer cooperates with the crotch area to form a pocket or receptacle for a sanitary napkin. Thus, in the illustrative embodiment, an auxiliary layer 20 of absorbent material is disposed over the crotch area 13 on the inner surface thereof, and opposite edges 21 and 22 of the auxiliary layer are sewed to the corresponding opposite edges of the crotch area 13 formed by the leg openings 11 and 12, respectively. Consequently, the entire central areas of the auxiliary layer 20 and the crotch area 13 are unattached, so that they can be separated to form a pocket receptacle for a sanitary napkin 30. More particularly, when the sanitary napkin 30 is inserted between the auxiliary layer 20 and the crotch area 13, it is held firmly in place and yet is still accessible to the menstrual fluids because of the absorbent nature of the relatively thin auxiliary ayer 20 which covers a portion of the inner surface of the napkin 30.

It will be appreciated that the auxiliary layer 20 may be secured to the edges of the crotch area 13 by successive threads that are used to secure the elastic bands 15 and 16 around the edges of the leg openings 11 and 12, so that no additional sewing steps are required to secure the auxiliary layer 20. Consequently, panties embodying the illustrative crotch construction can be efficiently manufactured at high production rates, and at a low cost. The auxiliary layer 20 has a square or rectangular configuration, so that they can be mass produced at high rates without any special patterns or the like. Thus the illustrative garment is uniquely adapted for automated production.

In accordance with another aspect of the present invention, at least two auxiliary layers are provided so that a first sanitary napkin can be inserted between the two auxiliary layers, with the layer on the soiled side of the napkin being subsequently removed along with the napkin. A second sanitary napkin can then be inserted between the remaining layer and the crotch area of the panty, so that the same panty can be used with two or more napkins before it must be thrown away. Thus, in the illustrative embodiment of the invention shown in the drawings, a second auxiliary layer 40 of absorbent material is provided between the first auxiliary layer 20 on the crotch area 13. The second layer 40 is secured to the panty in the same manner as the first layer 20, i.e., opposite edges 41 and 42 thereof are secured to the corresponding opposite edges of the crotch area formed by the leg openings 11 and 12, respectively. The two auxiliary layers 20 and 40 are preferably both secured to the panty by the same thread which is used to sew the elastic bands 15 and 16 around the edges of the leg openings 11 and 12, respectively.

As can be seen in FIG. 4, the two auxiliary layers 20 and 40 cooperate with the crotch area 13 of the panty to form two separate pockets or receptacles for sanitary napkins. More particularly, a first napkin may be inserted between the two layers 20 and 41, as illustrated in FIGS. 1 through 3. When the first napkin is removed, the auxiliary layer 20, which is on the soiled side of the napkin, is removed along with the napkin by simply tearing the material along the seam lines at the edges 21 and 22. It will be understood that the thread used to sew the elastic band and the edges of the auxiliary layers 20 and 40 to the panty is considerably stronger than the material comprising the auxiliary layers 20 and 40, so that material can be easily torn along the seam lines without weakening or breaking the seam.

After the first auxiliary layer 20 has been removed along with the first napkin, a second sanitary napkin may be inserted between the second auxiliary layer 40 and the crotch area 13 of the panty. When this second napkin is removed, the auxiliary layer 40 may also be removed in the same manner described previously for the first auxiliary layer 20, i.e., by tearing the material along the seam lines at the opposite edges.
41 and 42. The panty may then be further used without a sanitary napkin, if desired.

It will be appreciated that more than two auxiliary layers may be provided, to permit use of the panty with more than two sanitary napkins. The material used to form the auxiliary layers may be the same material used in the body portion of the panty, so that several auxiliary layers may be provided without excessively increasing the bulk in the crotch area of the panty. A particularly preferred material for the auxiliary materials is the exemplary material described previously for the body portion of the panty, i.e., a nonwoven crossed thread fabric having cotton appliques formed on opposite sides thereof. The fine fibrous applique on the surface of the material provides good absorbency, and yet it has a relatively large pore size so that absorbed menstrual fluids are readily transported through the open meshes of the crossed thread fabric to the sanitary napkin.

As can be seen from the detailed description, the present invention provides a disposable panty having an improved crotch construction adapted to receive a sanitary napkin, and which can be efficiently manufactured at high production rates at a low cost. Panties embodying this invention can be readily made in a single size that can be worn by relatively wide range of different sized users, and which can be made from extremely simple patterns. Indeed, the illustrative panty can be quickly made from only three or four pieces of disposable material with only a few simple seams. Panties embodying this invention are readily adaptable to automated production. Furthermore, the panty may be used with or without a sanitary napkin, and the preferred construction with two or more auxiliary layers permits the napkin to be changed without disposing of the panty, so that the same panty can be used several times before it must be disposed of.

I claim as my invention:
1. A disposable panty comprising the combination of a body portion forming a pair of leg openings and a crotch area between said leg openings, and at least two auxiliary layers of absorbent disposable material disposed over the inner surface of said crotch area with of said layers secured to said body portion at the opposite edges of said crotch area formed by said leg openings so that a sanitary napkin can be inserted between said auxiliary layers whereby the auxiliary layer on the soiled side of the napkin can be removed when the napkin is removed and the next napkin inserted between said crotch area and the remaining auxiliary layer.